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(54) Front-loading dishwashing machine

(57) A front-loading dishwashing machine comprises rinsing container (1) with skirt (8) drawn up from container base (7), door (2) which is mounted on the machine housing to be pivotable about a horizontal axis (9), the inner wall (3) of the door having a lip (5) which engages behind the skirt and seal (13) abutting the skirt, is characterised in that the lip is provided in its region facing the container base with passages (20) distributed over the width of the door. Rinsing out of region (6) is improved thereby in use.

Fig. 1

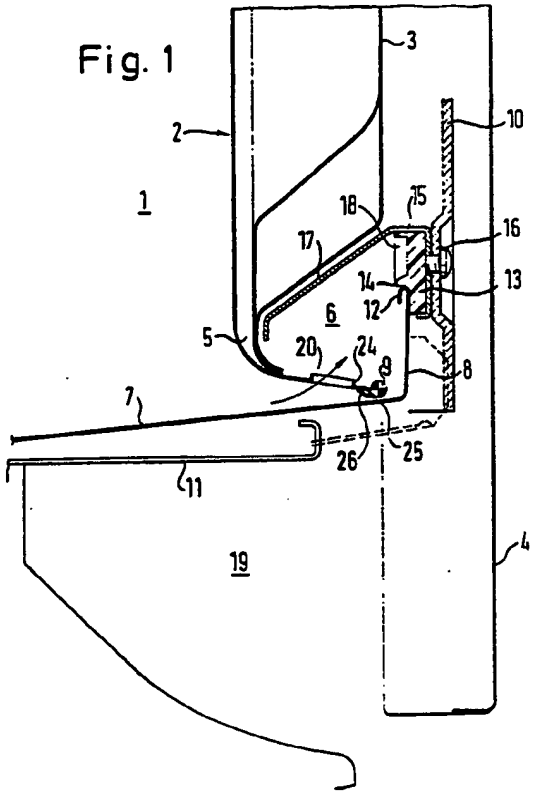

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Fig. 1

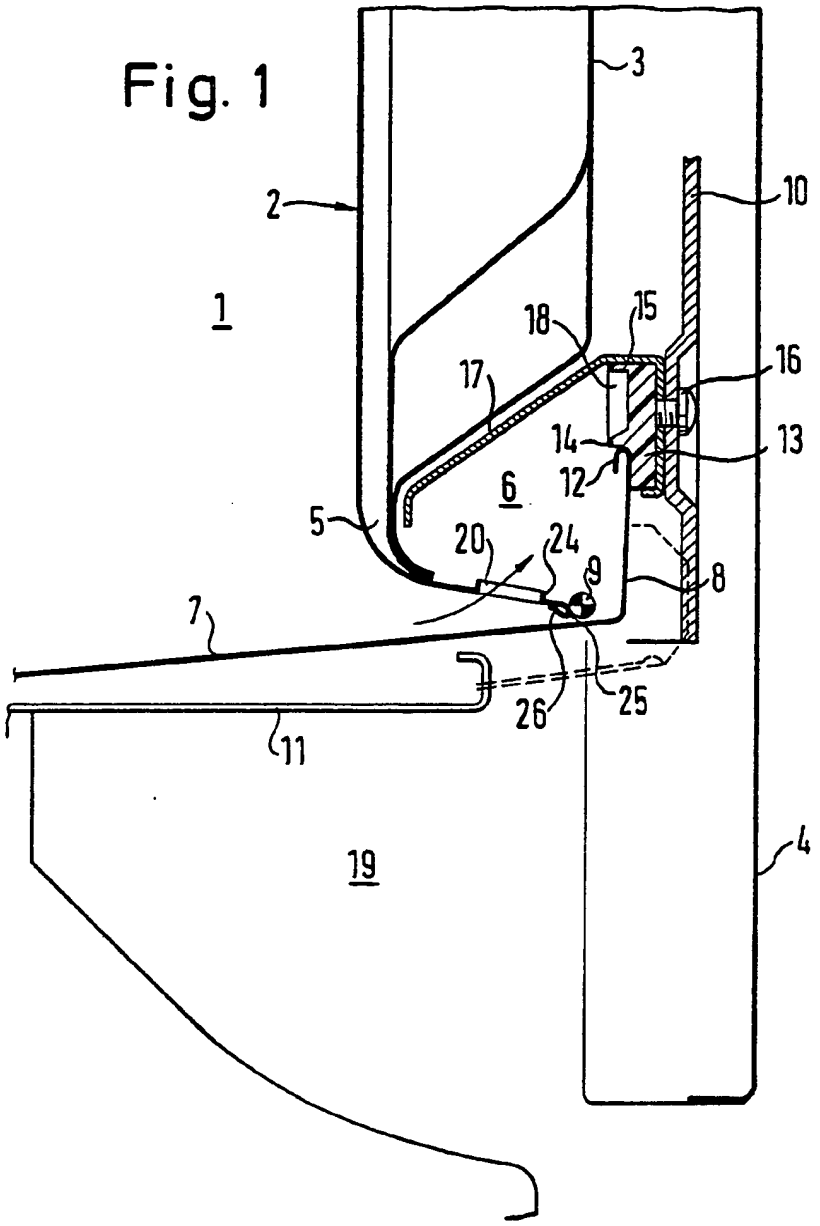
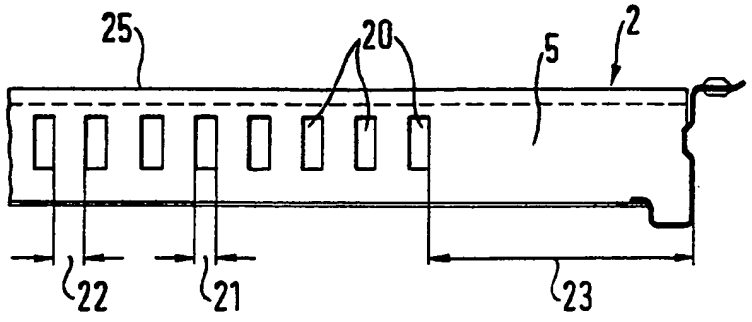


Fig. 2



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DISHWASHING MACHINE

The present invention relates to a front-loading dishwashing machine.

A dishwashing machine is known from DE-PS 35 41 789, in which a lip of a door ends at a large spacing from a transition of a rinsing container base into a skirt of the container. When the door is tilted up, dirt deposits can occur in the region of the skirt of the rinsing container and the door lip. In order to be able to rinse these out during operation of the machine, the mentioned large spacing of the door lip is provided. However, this results in a risk that splashing water may issue, especially in the corner regions of the door.

A further dishwashing machine is known from DE-OS 35 41 800, in which the door lip is prolonged into the region of the skirt. Although the risk of the issue of splashing water, in particular at the sides of the door, into the door is counteracted by this prolongation of the lip, the possibility of rinsing-out of dirt deposits in the region between the door lip and rinsing container base, and in particular in the region between skirt and door lip, is significantly reduced. According to experience, the dirt deposits on the prolonged door lip are rinsed out to only a small degree in this dishwashing machine, so that odours can occur after a short time. With the door open, a risk of injury to the user is represented by the sharp-edged door lip end.

Thereagainst, a dishwashing machine is disclosed in DE-PS 32 42 624, in which the door lip of an inner door panel is provided in the upper region with one or more passages which permit rinsing-out of dirt deposits in the region between the rinsing container skirt and door lip by the rinsing liquid conducted downwardly along the inner

door panel. These passages can be seen by the user when the door is open and impair the aesthetics of the door. Since the passages are directly accessible, the risk of injury to the user is increased compared with the arrangement disclosed in DE-OS 35 41 800. Moreover, due to food remnants dropping off the introduced corckery, congestion of the passages may occur. When the door is closed, the risk of congestion continues since the rinsing liquid running down from the crockery is highly contaminated.

There is therefore a need for a dishwashing machine in which not only the issue of splashing water may be prevented by a prolonged door lip, but also provision is made for rinsing aut of the region between skirt and door lip, without susceptibility of congestion or creation of risks to the user or impairment of the aesthetics of the door.

According to the present invention there is provided a front-loading dishwashing machine comprising a housing, a rinsing container arranged in the housing and provided with a skirt extending upwardly from the base of the container at an access opening thereof, and a door which for opening and closing of the opening is mounted on the housing to be pivotable about a substantially horizontal axis extending through the rinsing container adjacent to the junction of the container base and skirt and which is provided with a seal co-operable with the skirt and at the base of an inward wall of the door with a lip which, when the door is closed, is disposed behind and extends into the region of the skirt, the lip being provided in a portion thereof facing the base of the container when the door is closed with a plurality of passages distributed over the width of the door.

By virtue of the passages in the door lip, the possibility is

created for rinsing out of the region between the skirt and lip. Due to the fact that these passages are arranged in that region of the lip which faces the rinsing container base, the risk of injury to the user is reduced or avoided and the aesthetics of the door are not impaired, since the passages are not readily accessible and cannot be seen by the user even when the door is open. The position of the passages removes or reduces the risk of congestion, since food remnants cannot reach the passages on introduction of the crockery to be cleaned and since, when the door is closed and in operation of the machine, the rinsing liquid flowing along the rinsing container base to the passages in the door lip does not entrain dirt which could deposit in the passages.

With advantage, the passages are arranged at regular spacings.

In order to provide an arrangement which brakes the arriving rinsing liquid in the manner of a breakwater, the spacing of the passages is preferably equal to or greater than the width of the passages. This braking effect can be enhanced if the passages are kept as small as possible. Advantageously, the passages have a width of 6 millimetres or less.

For preference, the passages are elongate in shape and are arranged with their longer sides transverse to the door lip edge or door width direction.

In order to reduce the risk of injury to the user even further, the passages are expediently provided with rims which are drawn up, and do not project by more than 1.5 millimetres, on that side of the door lip which is opposite the rinsing container base. The restriction in the height of the rims counteracts a dirt deposit in the region thereof.

Since, according to experience, the splashing water mainly issues in the corner region of the door, the passages can be arranged in a row which ends at a spacing from the side of the door.

Expediently, a beading is provided at the door lip free end edge, whereby a further source of possible injury to the user is avoided.

An embodiment of the present invention will now be more particularly described by way of example with reference to the accompanying drawings, in which:

Fig. 1 is a schematic sectional elevation of the bearing and skirt sealing region of a dishwashing machine embodying the invention; and

Fig. 2 is an underneath view of a door lip of the machine.

Referring now to the drawings, there is shown part of a front-loading dishwashing machine which comprises a rinsing container 1 and a door 2 constructed in shell shape with an inner wall 3 and an outer wall 4. Control or metering devices (not shown) and so forth can be provided in the door 2 in its upper region. The door region at the base side between the outer wall 4 and a door lip 5 of the lower inner wall forms a hollow space 6 into which a skirt 8, drawn up vertically from the rinsing container base 7, projects when the door 2 is closed. The door 2, for closing an access opening of the rinsing container 1, is pivotable between a closed and an open setting about a horizontal axis 9. The axis 9 is defined by bearing blocks fixed to the machine housing and extends within the rinsing container 1 at a small spacing from the transition of the base 7 into the skirt 8. A door hinge is denoted by 10, a stiffening part for the door hinge by 11 and a pedestal recess by 19.

A metal or plastics material profile member 15 extends over the door width and is fastened, for example by screws 16, to the hinges 10 of the door 2. The member 15 carries a seal 13, which is strip-shaped. This can, for example, be glued to, foamed on or buttoned into the member 15. The seal 13 has a lip 14 or the like and lays itself by a lower portion thereof from the outside tightly against the skirt 8 in the closed setting of the door. The seal also forms a heightening of the skirt by an upper portion and lays itself against the skirt rim 12 by the sealing lip 14.

In order to protect the installation space formed in the door shell against spray water and entry of foam and vapour and to improve noise damping, the member 15 has a limb 17 which screens the hollow space 6 from the upper inside door space. The seal 13, through appropriate profiling, forms a kind of collecting channel 18, which on opening of the door receives any water adhering to the seal and prevents it from passing into the outer door or onto the floor. The member 15 is so structured with respect to its limb 17 and the seal 13 that it is freely pivotable about the door bearing axis 9 over the skirt rim 12 on opening of the door.

The door lip 5, which engages behind the skirt 8, reaches into the region of the skirt. In order that the rinsing container can be rinsed clean by the rinsing liquid in the region of the skirt space, passages 20 are provided in the lip 5 and conduct the arriving rinsing liquid into the space 6 so that liquid flows thorugh this space towards the rinsing container 1 according to the arrow in Fig. 1.

The passages 20 are arranged at regular spacings. In order to prevent issue of splashing water in the corner regions of the door,

the row of the passages ends at a spacing 23 from the sides of the door 2 (Fig. 2).

The passages 20 have a width 21 of 6 millimetres or less. The spacing 22 of the passages is equal to or greater than the width 21 of the passages. The passages 20 are elongate in shape and are arranged with their longer sides transverse to the door lip edge 25. They are bounded by rims 24, which are drawn up and project into the hollow space 6 by not more than 1.5 millimetres on that side of the lip which is opposite the rinsing container base 7. A beading 26 is arranged at the door lip free end edge 25.

CLAIMS

1. A front-loading dishwashing machine comprising a housing, a rinsing container arranged in the housing and provided with a skirt extending upwardly from the base of the container at an access opening thereof, and a door which for opening and closing of the opening is mounted on the housing to be pivotable about a substantially horizontal axis extending through the rinsing container adjacent to the junction of the container base and skirt and which is provided with a seal co-operable with the skirt and at the base of an inward wall of the door with a lip which, when the door is closed, is disposed behind and extends into the region of the skirt, the lip being provided in a portion thereof facing the base of the container when the door is closed with a plurality of passages distributed over the width of the door.

2. A dishwashing machine as claimed in claim 1, wherein the passages are disposed at regular spacings.

3. A dishwashing machine as claimed in either claim 1 or claim 2, wherein each two adjacent passages are spaced apart by an amount at least equal to the width of each passage in the width direction of the door.

4. A dishwashing machine as claimed in any one of the preceding claims, wherein the width of each passage in the width direction of the door is at most six millimetres.

5. A dishwashing machine as claimed in any one of the preceding claims, wherein each of the passages is elongate in a direction transverse to the width direction of the door.

6. A dishwashing machine as claimed in any one of the preceding claims, wherein each of the passages is bounded, at a side of the lip facing away from the container base, by a rim projecting by at most 1.5 millimetres from that side.

7. A dishwashing machine as claimed in any one of the preceding claims, wherein the passages are arranged in a row which ends at spacings from the lateral edges of the door.

8. A dishwashing machine as claimed in any one of the preceding claims, wherein the lip is provided at its free end with a beaded edge.

9. A dishwashing machine substantially as hereinbefore described with reference to the accompanying drawings.

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